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A METHOD, SYSTEM, AND STORAGE MEDIUM FOR PROVIDING COMPREHENSIVE ORIGINATOR IDENTIFICATION SERVICES

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A METHOD, SYSTEM, AND STORAGE MEDIUM FOR PROVIDING COMPREHENSIVE ORIGINATOR IDENTIFICATION SERVICES

BACKGROUND OF THE INVENTION

[0001] Embodiments of the invention relate generally to telecommunications, and more particularly, to a method, system, and storage medium for providing comprehensive originator identification services over a communications network.

[0002] The development of caller identification services has had a significant impact on the ability for called parties to more effectively manage their communications. In emergency situations, existing caller identification services provide a way for an emergency center to identify the location and the identity of the calling party and for calling the party back should the two parties become disconnected. Many consumers use caller identification to screen incoming calls from parties they do not wish to talk to. Conversely, call blocking services allow callers to keep their identities and/or telephone numbers private in cases where they do not wish the receiving party to have this information. Other forms of communication, such as email, provide some level of identification information regarding the originator before the recipient opens the message (e.g., originator, subject matter). These solutions, while beneficial, do not take full advantage of what is now possible with existing technology.

[0003] What is needed, therefore, is a way to extend existing capabilities and functionality for caller identification services by providing detailed information about an incoming communication before the communication session has been established.

SUMMARY OF THE INVENTION

[0004] Embodiments relate to a method, system, and storage medium for transmitting enhanced originator information over a communications network. The method includes receiving information elements selected by an originator terminal from a database. The information elements retrieved are based upon a service plan and/or a terminal capability associated with a recipient terminal. The method also

includes transmitting a communication including the information elements to the recipient terminal prior to establishing a communications session with the recipient terminal. The transmission is conducted over at least one of: an Internet Protocol network, a public switched telephone network, a wireless local area network, a wireless network, a cable network, a fiber optic network, a video network, and a satellite network.

[0005] Embodiments further include a system for providing comprehensive originator identification services over a communications network. The system includes a caller identification-enabled recipient terminal operating over a communications network via a service provider, an originator terminal operating over a communications network via a service provider, and an originator communications information database. The system also includes an originator identification system executing over the communications network. The originator identification system receives information elements selected by an originator terminal from a database based upon at least one of a service plan and a terminal capability associated with a recipient terminal. The originator identification system also transmits a communication including the information elements to the recipient terminal prior to establishing a communications session with the recipient terminal. The transmission is conducted over at least one of: an Internet Protocol network, a public switched telephone network, a wireless local area network, a wireless network, a cable network, a fiber optic network, a video network, and a satellite network.

[0006] Embodiments also include a terminal device for transmitting enhanced originator information over a communications network. The terminal device is enabled with caller identification. The terminal device includes an originator identification system in communication with the terminal device. The terminal device operates over a communications network via a service provider. The terminal device is linked to an originator communications information database. The terminal device receives information associated with an originator of a communication. The information includes information elements comprising at least one of: font and character style capabilities, a logo, an image, audio, multi-media, animation, VPIM, a

uniform resource locator, a physical location address, video, an alerting tone, and advertising material.

[0007] Other systems, methods, and/or computer program products according to embodiments will be or become apparent to one with skill in the art upon review of the following drawings and detailed description. It is intended that all such additional systems, methods, and/or computer program products be included within this description, be within the scope of the present invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Referring now to the drawings wherein like elements are numbered alike in the several FIGURES:

[0009] FIG. 1 is a block diagram of a system upon which the originator identification system is implemented in exemplary embodiments of the invention;

[0010] FIG. 2 is a flowchart describing the process of implementing the originator identification system over a circuit switched communications network in exemplary embodiments of the invention;

[0011] FIG. 3 is a graphical representation of the originator identification system process described in FIG. 2 in exemplary embodiments of the invention;

[0012] FIG. 4 is a flowchart describing the process of implementing the originator identification system over a packet-switched, peer-to-peer communications network in exemplary embodiments of the invention; and

[0013] FIG. 5 is a graphical representation of the originator identification system process described in FIG. 4 in exemplary embodiments of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0014] The originator identification system of the invention is a flexible and comprehensive communications identification service that provides a variety of

information about a communication to its recipient prior to the recipient establishing a communications session. The originator identification system is capable of being implemented over varying communications networks and for a variety of types of communications devices and technologies. The originator identification system of the invention refers to a system that provides comprehensive information about a calling party to a recipient party via any communications means and is not to be confused with caller identification devices/services commonly known in the art which provide limited caller information such as a phone number or name or systems that use this information to retrieve additional information from locally or centralized databases associated with the individual's address book or a company's customer list.

[0015] The originator identification system is executed via one or more communications networks as shown in system 100 of FIG. 1. FIG. 1 depicts communications devices 102-106 in communication with circuit-switched network 108. Circuit-switched network 108 represents a standard public switched telephone network (PSTN).

[0016] Also included in system 100 is communications device 114 in communication with packet-switched network 118. Packet-switched network 118 may be local area network, wide area network, metropolitan area network, Internet network, or other similar type of network environment.

[0017] Additionally, communications devices 120 and 122 are in communication with wireless network 124. Wireless network 124 may be a cellular communications network, a fixed wireless network, a wireless local area network, a personal area network (PAN) or other suitable network system and includes equipment for receiving and transmitting signals such as a cell tower and mobile switching center.

[0018] Networks 108, 118, and 124 are, in turn, in communication with Originator Communications Information (OCI) database 110 and service profile database 112.

[0019] OCI database 110 stores information elements for use in creating, transmitting, and displaying communications information in a caller identification environment. Information elements may include font and character style capabilities such as Times New Roman font set at 12 characters per inch (cpi) that is presentable in bold, italic, and/or underlined form. Information elements may also include logos, images, audio, multi-media, animation, VPIM, uniform resource locators, physical location addresses, video, alerting tones, and advertising material. These information elements may be created and provided by an originating calling device and/or a calling network such as network 108, 118, and 124. OCI information is provided to a recipient prior to the opening or establishment of a communications session.

[0020] Service profile database 112 stores information relating to the communications devices and service plans associated with users of the originator identification system. The capabilities and limitations of the communications device are stored in service profile database 112. Further, various packages and options may be established for users such as a standard plan that provides a subset of the possible features of the invention or a premium package that is more inclusive.

[0021] OCI database 110 communicates with service profile database 112 for determining what information elements may be accommodated for a communications device. OCI database 110 provides a dual-structured data store for servicing both traditional caller identification enabled devices such as device 102, as well as newer or next generation communications devices such as device 104, which provides advanced capabilities. For example, where a telephone is graphically enabled (e.g., VoIP or cellular), the caller identification element may be leveraged to incorporate a compression algorithm enabling it to hold the additional information elements provided by the OCI database 110. The service profile database 112 would indicate the functionality of the enhanced telephone and the appropriate record data would be accessed from OCI database 110. Another example is a traditional caller identification feature enabled on a telephone with a simple monochrome display that does not support graphics (i.e., only ASCII). The service profile database 112 record for this device would communicate this capability to OCI database 110 which, in turn,

would send only the traditional simple binary caller identification information. In this manner, the database provides both standard and the OCI information elements.

[0022] Communications device 102 refers to a caller identification-enabled telephone that utilizes a Public Switched Telephone Network (PSTN) carrying analog voice data. Communications device 102 supports traditional caller identification capabilities in accordance with Signaling System 7 (SS7) technology and the Automatic Number Identification (ANI) method used to identify billing accounts. SS7 refers to a telecommunications protocol developed by the International Telecommunications Union (ITU) and is well known in the art.

[0023] Communications device 104 refers to a communications device that supports the originator identification system services of the invention. Communications device 104 is enabled to receive traditional caller identification services along with enhanced features, such as graphics. For example, communications device 104 may be a next generation telephone device with processor, memory, screen and logic to display text and graphic including images on display of the user device.

[0024] Communications device 106 refers to a telephone that is part of a private communications network (i.e., private branch exchange (PBX), softswitch) for an enterprise. A telephone user shares one or more phone numbers with other telephones within the exchange. Communications device 106 supports the features of the originator identification system, as described above with respect to device 104, through the PBX network.

[0025] Communications device 114 refers to a device that communicates through a packet-switched network. For example, communications device 114 may be a personal computer that executes email software and subscribes to an email service. Additionally, the personal computer includes an operating system with a graphics component and a display device for presenting communications. In alternative embodiments, communications device 114 may be an Internet-enabled appliance, such as a television or microwave oven that supports the features of the

originator identification system. In the personal computer example above, the communication identification system of the invention services communications device 114 by providing comprehensive information about an incoming email to a recipient via email software executing therein.

[0026] Communications device 120 refers to a caller identification-enabled communications device that sends communications over a wireless network. Communications device 120 may be a wireless mobile telephone that communicates via a cell tower and mobile switching center, which, in turn, communicates to other networks via a central office.

[0027] Communications device 122 refers to a caller identification-enabled communications device that includes graphics capabilities that support the features of the originator identification system of the invention. Communications device 122 may be a mobile computing device or personal digital assistant (PDA) with networking capability such as a web browser and an Internet Service Provider subscription for allowing the PDA to communicate digitally with other communications devices.

[0028] The telecommunications infrastructure required for enabling communications devices 102-106, 114, 120 and 122 are well known and will be understood by those skilled in the art. The originator identification system may provide options to users of communications devices such as the ability to block some information elements and screening and transmission control of information elements. For example, a user may block or screen information elements such as pornographic materials, all video materials, or other criteria-based measures. A recipient may prevent any calls in which a caller has blocked information elements or may forward any calls containing video elements to a cell phone. Alternative embodiments include sending only text caller information (for text only devices), sending information using traditional text caller information with supplemental enhanced originator information using transparent signaling. Other embodiments include utilizing XHTML protocol to communicate OCI data to a receiving terminal. Where transmission bandwidth is limited the OCI data is compressed before transmission. The transport layer protocol

may include SMDF, ADSI, TCP/IP, and WAP protocols (i.e., WSP, WTP, WDP, and WCMP). These and other services may be implemented using the originator identification system.

[0029] The functionality of the originator identification system may also be extended to telephony applications such as call receipt, call waiting, and call forwarding. It may also be extended to applications such as email, unified messaging, facsimile, video conferencing, audio conferencing, call center applications utilizing caller information to retrieve information or update databases, sending originator information through a communications channel not associated with the recipient of the message content (e.g., originator identification through instant messaging or a web browser), and sharing OCI information between devices, among others.

[0030] The originator identification system is implemented over one or more of networks 108, 118, and 124 as described in FIGs. 2-5. The originator identification system can be implemented in a variety of communications environments including, for example, a data network such as the Internet, a voice communications network, and may include various types of networks including wireless, asynchronous transfer mode (ATM) network, and Multiprotocol Label Switching (MPLS).

[0031] Turning now to FIG. 2, implementation of the originator identification system over a PSTN network will now be described. A voice call is initiated at step 202 in which an originating terminal places a call to a recipient terminal. The graph in FIG. 3 provides sample data that may be associated with the call. For example, FIG. 3 displays a phone number, 123-555-1214, associated with an originating terminal (OT) number and an arrow indicating the transmission of the call to a switch or router on the network. The originator identification system executing on the network queries service profile database 112 at step 204 to determine the service type and/or device type that is associated with the recipient terminal. For example, the originator identification system needs to know what technological and/or service type capabilities are associated with the recipient terminal. It may be that the recipient terminal does not support caller identification or that the recipient terminal supports

caller identification but only in the traditional ASCII format. It may also be that the respective network provides service plan options or packages that a recipient terminal user needs to subscribe to in order to benefit from the services offered by the originator identification system. These and other types of information may be provided in service profile database 112.

[0032] The respective service profile for the recipient terminal is retrieved and provided to the network that initiated the query at step 206. At step 208, an OCI request is transmitted to OCI database 110 based upon the service profile associated with the recipient terminal. As indicated above, the OCI information may include graphics such as logos or icons, varying font and color elements, images, sound, video, and any multi-media information supported by the recipient and originator terminals and their networks. The OCI information requested from OCI database 110 is retrieved and sent to the recipient terminal at step 210. The call is forwarded to the recipient terminal at step 212. As shown in FIG. 3, the sample OCI information transmitted to the recipient terminal includes the originating party's name, company name, address, and web site address.

[0033] As indicated above, the originator identification system may be implemented over various types of communications networks. FIG. 4 describes the process of implementing the originator identification system over a peer-to-peer network. Additionally, a graphical representation of the process flow described in FIG. 4 is shown in FIG. 5. A session request is initiated by an originating terminal at step 402. The originating terminal address as shown in FIG. 5 is "192.168.1.1." The session request is transmitted to the recipient terminal using the address provided in the session request, and in the example data shown in FIG. 5 is "192.168.1.100." The recipient terminal accesses the originator identification system, which in turn, queries OCI database 110 for OCI information associated with the originating terminal at step 404. It will be understood that the service profile database 112 need not be accessed in this instance, as the originating and recipient terminals are both computer devices as evidenced by the routing addresses. In this manner, the communications transmissions are processed in accordance with traditional digital networking protocols. The OCI information is retrieved and forwarded to the recipient terminal at

step 406. The sample OCI data that may be transmitted are reflected in FIG. 5 and include the originating party's name, company, address, web site address, and logo. The communication session is established at step 408 in which the recipient terminal user views the originator's information without opening the communication itself.

[0034] As indicated above, the originator identification system is a comprehensive communications service that provides a variety of information to communications recipients prior to opening or establishing a communications session with the sender of the communication. This allows recipients to better manage their communications by enabling them to make more informed decisions about the screening, routing, organizing, if or when to open or establish a communication.

[0035] As described above, embodiments may be in the form of computer-implemented processes and apparatuses for practicing those processes. In exemplary embodiments, the invention is embodied in computer program code executed by one or more network elements. Embodiments include computer program code containing instructions embodied in tangible media, such as floppy diskettes, CD-ROMs, hard drives, or any other computer-readable storage medium, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. Embodiments include computer program code, for example, whether stored in a storage medium, loaded into and/or executed by a computer, or transmitted over some transmission medium, such as over electrical wiring or cabling, through fiber optics, or via electromagnetic radiation, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. When implemented on a general-purpose microprocessor, the computer program code segments configure the microprocessor to create specific logic circuits.

[0036] While the invention has been described with reference to exemplary embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention

without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiments disclosed for carrying out this invention, but that the invention will include all embodiments falling within the scope of the claims.